

### Office Action Summary

**Application No.**

10/788,464

**Applicant(s)**

SAKAMOTO ET AL.

**Examiner**

EDNA WONG

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3, 5-10, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-10, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date January 18, 2008
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

This is in response to the Amendment dated January 22, 2008. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Response to Arguments***

**Claim Rejections - 35 USC § 112**

I. Claims **1, 3 and 5-10** have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The rejection of claims 1, 3 and 5-10 under 35 U.S.C. 112, first paragraph, has been withdrawn in view of Applicants' amendment.

II. Claims **1, 3 and 5-10** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 1, 3 and 5-10 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC §103

I. Claims **1, 3 and 5-8** have been rejected under 35 U.S.C. 103(a) as obvious over **JP 2002-212775** ('775) in combination with **Du Rose et al.** (US Patent No. 3,183,067).

The rejection of claims 1, 3 and 5-8 under 35 U.S.C. 103(a) as obvious over JP 2002-212775 ('775) in combination with Du Rose et al. is as applied in the Office Actions dated November 15, 2006, May 9, 2007 and October 22, 2007 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that Oshima teaches an oxycarboxylic acid as the pH buffer. For at least this reason, it is unreasonable to assert that Oshima anticipates, or would have rendered obvious, the combination of all of the features recited in claims 1 and 9.

In response,

Claim 1, lines 3-6, recite:

"electroplating a first protective film including nickel on a magnet body including a rare-earth element with a first plating bath of water solution, the first plating bath consisting of a nickel source, a conductive salt, a pH stabilizer, and **optional additives**."

Claim 9, lines 3-10, recite :

"electroplating a first protective film including nickel on a magnet body including a rare-earth element with a first plating bath of water solution, the first plating bath consisting of 0.3 mol/l to 0.7 mol/l of nickel ions, at least one ion selected from the group consisting of sulfate ions, chlorine ions and bromine ions, at least one ion selected from the group consisting of sodium ions, potassium ions, lithium ions and magnesium ions, a borate ion, a semi-brightener and **optional additives**."

The "optional additives" recited in claims 1 and 9 read on the oxycarboxylic acids disclosed by Oshima. There is no reason why this is not a reasonable interpretation of the claim limitation.

II. Claims **9 and 10** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 2002-212775** ('775) in combination with **Du Rose et al.** (US Patent No. 3,183,067) and **Martin** (US Patent No. 2,986,501).

The rejection of claims 9 and 10 under 35 U.S.C. 103(a) as being unpatentable over JP 2002-212775 ('775) in combination with Du Rose et al. and Martin is as applied in the Office Actions dated May 9, 2007 and October 22, 2007 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

### ***Response to Amendment***

#### ***Claim Objections***

Claim 1 is objected to because of the following informalities:

#### Claim 1

line 4, it is suggested that the word -- a -- be inserted after the word "of".

line 8, it is suggested that the word -- is -- be inserted after the word "source".

line 9, it is suggested that the word -- is -- be inserted after the word "stabilizer".

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

I. Claim **23** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 2002-212775** ('775) in combination with **Du Rose et al.** (US Patent No. 3,183,067) as applied to claims 1, 3 and 5-8 above, and further in view of **Di Bari** ("Nickel Electroplating", Based on the Article *Nickel Plating* by George Di Bari in the *ASM Handbook*, Vol. 5, *Surface Engineering*, published by ASM International, Materials Park, Ohio 44073, 1994, page 201, and reproduced with permission of the publisher, pp. 1-26).

JP '775 and DuRose are as applied above and incorporated herein.

The method of JP '775 differs from the instant invention because JP '775 does not disclose wherein the first plating bath consists of the nickel source, the conductive salt, and the pH stabilizer, as recited in claim 23.

Like JP '775, Di Bari teaches decorative nickel plating and multilayer coatings. Di Bari teaches that bright nickel plating solutions are modifications of the Watts formulation, but contain organic and other additive that act to produce a fully bright finish suitable for immediate chromium plating without mechanical finishing (pages 6-7; and page 9, "Double-layer coatings").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the first plating bath described by JP '775 with wherein the first plating bath consists of the nickel source, the conductive salt, and the pH stabilizer because the omission of an element and its function is obvious if the

function of the element is not desired (MPEP § 2144.04(II)(A)).

Thus, depending upon the desired nickel finish (e.g., a matte finish, a semi-bright finish, or a bright finish), one having ordinary skill in the art has the skill to have modified the plating solution with organic and other additives that would produce the desired results as taught by Di Bari (pages 6-7; and page 9, "Double-layer coatings").

II. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-212775 ('775) in combination with Du Rose et al. (US Patent No. 3,183,067) and Martin (US Patent No. 2,986,501) as applied to claims 9 and 10 above, and further in view of Di Bari ("Nickel Electroplating", Based on the Article *Nickel Plating* by George Di Bari in the *ASM Handbook*, Vol. 5, *Surface Engineering*, published by ASM International, Materials Park, Ohio 44073, 1994, page 201, and reproduced with permission of the publisher, pp. 1-26).

JP '775 and DuRose are as applied above and incorporated herein.

The method of JP '775 differs from the instant invention because JP '775 does not disclose wherein the first plating bath consists of 0.3 mol/l to 0.7 mol/l of nickel ions, at least one ion selected from the group consisting of sulfate ions, chlorine ions and bromine ions, at least one ion selected from the group consisting of sodium ions, potassium ions, lithium ions and magnesium ions, the borate ion, and the semi-brightener, as recited in claim 24.

Like JP '775, Di Bari teaches decorative nickel plating and multilayer coatings. Di

Bari teaches Di Bari teaches that bright nickel plating solutions are modifications of the Watts formulation, but contain organic and other additive that act to produce a fully bright finish suitable for immediate chromium plating without mechanical finishing (page 6-7; and page 9, "Double-layer coatings").

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the first plating bath described by JP '775 with wherein the first plating bath consists of 0.3 mol/l to 0.7 mol/l of nickel ions, at least one ion selected from the group consisting of sulfate ions, chlorine ions and bromine ions, at least one ion selected from the group consisting of sodium ions, potassium ions, lithium ions and magnesium ions, the borate ion, and the semi-brightener because the omission of an element and its function is obvious if the function of the element is not desired (MPEP § 2144.04(II)(A)).

Thus, depending upon the desired nickel finish (e.g., a matte finish, a semi-bright finish, or a bright finish), one having ordinary skill in the art has the skill to have modified the plating solution with organic and other additives that would produce the desired results as taught by Di Bari (pages 6-7; and page 9, "Double-layer coatings").

III. Claims **1, 3, 5-8 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 50-118930** ('930) in combination with **JP 2002-212775** ('775).

JP '930 teaches a method of manufacturing a rare-earth magnet, comprising the steps of:

(a) electroplating a first protective film including nickel on a body (= a substrate) with a first plating bath of water solution, the first plating bath consisting of:

- (i) a nickel source (=  $\text{NiSO}_4$ );
- (ii) a conductive salt (=  $\text{NiCl}_2$ );
- (iii) a pH stabilizer (=  $\text{H}_3\text{BO}_3$ ); and
- (iv) optional additives (= m-sulphobenzoic acid (I), 1,5-naphthalenedisulphonic acid, Na salt (II) and Na 1,4-diethoxy-2-butyne-sulphonate (III)) and

having a concentration of the nickel source on a nickel atom basis and conductivity, the nickel source selected from the group consisting of nickel sulfate, nickel chlorides and nickel bromides (=  $\text{NiSO}_4$ ) and the pH stabilizer selected from the group consisting of boric acid, sodium borate, potassium borate, lithium borate and magnesium borate (=  $\text{H}_3\text{BO}_3$ ); and

(b) forming a second protective film including nickel and sulfur on the first protective film (= a multilayer Ni electroplating is carried out using the final bright Ni plating bath having S-containing organic brightener with  $\geq 2$  anionic functional groups selected from  $\text{SO}_3^-$ ,  $\text{COO}^-$  and  $\text{SO}_2\text{N}$ ) [abstract].

The first plating bath consists of the nickel source, the conductive salt, and the pH stabilizer (= treated solution is recycled into the non-bright or semi-bright Ni plating bath. I < 0.01 g/l; II < 0.005 g/l; and III < 0.01 g/l, where I, II and III = 0 g/l) [abstract].

The second protective film is formed by electroplating (= a multilayer Ni



electroplating is carried out) with a second plating bath including a nickel source (=  $\text{NiSO}_4$ ), a conductive salt (=  $\text{NiCl}_2$ ), a pH stabilizer (=  $\text{H}_3\text{BO}_3$ ) and an organic sulfur compound (= 0.11 g/l of m-sulphobenzoic acid (I), 0.20 g/l of naphthalenedisulphonic acid, Na salt (II) and 0.10 g/l of Na 1,4-diethoxy-2-butyne-sulphonate (III)) [abstract], having a conductivity.

The nickel source is selected from the group consisting of nickel sulfate, nickel chlorides and nickel bromides (=  $\text{NiSO}_4$ ) [abstract].

The pH stabilizer is selected from the group consisting of boric acid, sodium borate, potassium borate, lithium borate and magnesium borate (=  $\text{H}_3\text{BO}_3$ ) [abstract].

The method of JP '930 differs from the instant invention because JP '930 does not disclose the following:

a.     Wherein the body is a magnet body including a rare-earth element, as recited in claim 1.

Like JP '930, JP '775 teaches a multilayer nickel electroplating. The multilayer nickel electroplating is on a magnet body including a rare-earth element (= R-Fe-B system permanent magnet). Since the metal kind (especially R) has easy oxidation corrosion in atmospheric air, when it is used without surface treatment, under the effect of a slight acid and alkali, moisture, etc., corrosion will advance from a front face, rust will generate, and they will cause degradation and dispersion of magnetic properties in connection with it. In order to avoid these troubles, forming a nickel plating coat as a

corrosion-resistant coat in the front face is performed by electric nickel plating (page 1, [0002]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the body described by JP '930 with wherein the body is a magnet body including a rare-earth element because electroplating nickel a magnet body including a rare-earth element (= R-Fe-B system permanent magnet) would have reduced degradation and dispersion of magnetic properties in connection with oxidation corrosion or rust as taught by JP '775 (page 1, [0002]).

b. Wherein the concentration of the nickel source is **0.3 mol/l** to 0.7 mol/l on a nickel atom basis, as recited in claim 1.

JP '930 teaches 42.3 g/l of  $\text{NiSO}_4$  and 8.5 g/l of  $\text{NiCl}_2$  (abstract). The concentration of the nickel source would have been **0.201 mol/l**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the nickel source described by JP '930 with wherein the concentration of the nickel source is 0.3 mol/l to 0.7 mol/l on a nickel atom basis because a *prima facie* case of obviousness exists where claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties (MPEP § 2144.05(I)).

A difference of **0.1 mol/l** is not deemed a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and

unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

- c.       Wherein the conductivity is 80 mS/cm or over, as recited in claims 1 and 5.

The invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because JP '930 discloses a first plating bath in a similar manner as presently claimed. Thus, one having ordinary skill in the art would have expected that similar plating baths would have had the same properties, unless proven otherwise.

- d.       Wherein the conductive salt is selected from the group consisting of sodium sulfate, potassium sulfate, lithium sulfate, magnesium sulfate, sodium chloride, potassium chloride, lithium chloride, magnesium chloride, sodium bromide, potassium bromide, lithium bromide and magnesium bromide, as recited in claims 3 and 7.

JP '775 teaches adding sodium sulfate and ammonium chloride, etc. as an electric conduction adjuvant (page 3, [0012]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the plating baths described by JP '930 with wherein the conductive salt is selected from the group consisting of sodium sulfate, potassium sulfate, lithium sulfate, magnesium sulfate, sodium chloride, potassium chloride, lithium chloride, magnesium chloride, sodium bromide, potassium bromide, lithium bromide and magnesium bromide because sodium sulfate is a conventional conductive salt in nickel electroplating baths as taught by JP '775 (page 3, [0012]). One having ordinary skill in the art would have known that adding a conductive salt to the plating baths would have improved the electrical conductivity of the plating baths. It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination (MPEP § 2144.06 and § 2144.07).

**IV. Claims 9-10 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 50-118930** ('930) in combination with **JP 2002-212775** ('775) and **Di Bari** ("Nickel Electroplating", Based on the Article *Nickel Plating* by George Di Bari in the *ASM Handbook*, Vol. 5, *Surface Engineering*, published by ASM International, Materials Park, Ohio 44073, 1994, page 201, and reproduced with permission of the publisher, pp. 1-26).

JP '930 and JP '775 are as applied for the reasons as discussed above.

The method of JP '930 differs from the instant invention because JP '930 does not disclose wherein the first plating bath consists of a semi-brightener, as recited in claims 9 and 24.

Like JP '930, JP '775 teaches a multilayer nickel electroplating. JP teaches that the various kinds of brighteners, such as sodium lauryl sulfate, 2-butyne 1,4-diol, benzenesulfonic acid, propargyl alcohol, and a *coumarin*, itself – a well known organic additive and an inorganic additive may be added to the nickel plating liquid (page 3, [0012]).

Like JP '930, Di Bari teaches decorative nickel plating and multilayer coatings. Di Bari teaches that there are two families of semi-bright nickel plating processes that are usually referred to as *coumarin* and *non-coumarin* types (page 9, lines 1-15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the first plating bath described by JP '930 with wherein the first plating bath consists of a semi-brightener because depending upon the desired nickel finish (e.g., a matte finish, a semi-bright finish, or a bright finish), one having ordinary skill in the art has the skill to have modified the plating solution with organic and other additives that would produce the desired results as taught by Di Bari (pages 6-7; and page 9, "Double-layer coatings").

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDNA WONG whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edna Wong/  
Primary Examiner  
Art Unit 1795

EW  
February 19, 2008